

BOARD OF PHARMACEUTICAL SPECIALITIES

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Content Outline for the NUTRITION SUPPORT PHARMACY SPECIALTY CERTIFICATION EXAMINATION March 2007

The following domains, subdomains, tasks and knowledge statements were delineated by the BPS Specialty Council on Nutrition Support Pharmacy Practice and validated through a role delineation study, conducted in 2006. The proportion of examination items allotted to each domain and subdomain was determined through analysis and discussion of the results of the role delineation study by the Specialty Council.

Each of the major areas/domains of Nutrition Support Pharmacy practice noted below will be tested. Questions will not be grouped by domain. Rather, items testing each domain are distributed throughout the total examination. Please note this examination will **SAMPLE** a candidate's knowledge rather than trying to test all of his/her knowledge. Examination items will address problems and situations reflective of the full range of practice sites (e.g., home care, hospital).

Domain 1: Clinical Practice/Provision of Individualized Nutrition Support to Patients **(68% of the examination)**

Subdomain A. Assessment (21% of the examination)

Tasks:

1. Interview the patient and/or designated caregiver to obtain medical, nutritional, psychosocial, and socioeconomic history in order to assess nutritional status
2. Review the medical history for disease states, clinical conditions, medical/surgical therapies, laboratory findings, imaging studies, and physical findings in order to assess nutritional status
3. Measure and/or interpret physical assessment parameters relevant to nutritional status
4. Evaluate subjective and objective data to identify a patient who is, or may become, overnourished or undernourished
5. Identify interactions between drugs, dietary supplements, and nutrients
6. Estimate daily micro/macro nutrient requirements
7. Evaluate educational needs of the patient, health-care providers, and caregivers regarding specialized nutrition support (SNS)
8. Evaluate the indications for and suitability of the patient for SNS
9. Identify available nutrition support access
10. Evaluate eligibility for reimbursement of SNS (e.g., diagnosis, formulations, services, supplies)

Knowledge of:

- 01 Components of a nutritionally adequate diet (e.g., dietary reference intake [DRI])
- 02 Normal ingestion, digestion, absorption, metabolism, and excretion of nutrients
- 03 Relationship between nutrient intake and nutritional status
- 04 Effects of psychosocial and socioeconomic factors on nutritional status
- 05 Effects of education level, comprehension, home environment, and disabilities on educational needs
- 06 Diagnostic tests and findings used to assess nutrition status
- 07 Physical assessment techniques and findings used to evaluate nutritional status
- 08 Effects of disease states, clinical conditions or altered metabolism on nutritional status
- 09 Effects of medical and/or surgical therapies on nutritional status (e.g., renal replacement therapies, cardiopulmonary bypass, mechanical ventilation)
- 10 Effects of nutritional status on disease states
- 11 Interactions between drugs, dietary supplements, and nutrients
- 12 Effects of drugs and dietary supplements on nutritional status
- 13 Effects of nutritional status or specialized nutrition support (SNS) on drug pharmacokinetics and pharmacodynamics
- 14 Indications, risks, and benefits of SNS
- 15 Guidelines for nutrient requirements
- 16 Methods to determine patient-specific nutrient requirements
- 17 Effects of disease states, clinical conditions, and altered metabolism on the determination of patient-specific nutrient requirements
- 18 Types of vascular and enteral access devices
- 19 Regulations and guidelines for eligibility, coverage, and reimbursement for parenteral and enteral nutrition therapies

Subdomain B. Develop and Implement a Therapeutic Plan of Care (21% of the examination)**Tasks:**

1. Define the goals of specialized nutrition support (SNS)
2. Recommend/select the preferred route for the administration of SNS
3. Recommend/select an appropriate feeding formulation
4. Evaluate the appropriate pharmacologic use of adjunctive agents
5. Recommend/select the administration method for feeding formulations (e.g., cyclic, bolus, continuous)
6. Recommend/select the delivery system for feeding formulations
7. Recommend/select the feeding regimen to include initiation, advancement, and discontinuation of SNS
8. Design and implement a plan to monitor the clinical nutritional and metabolic responses to SNS
9. Design and implement a plan to prevent or manage complications of SNS
10. Design and implement a plan to prevent or manage interactions between drugs, dietary supplements and nutrients
11. Design and implement a plan to educate the patient, health-care professionals, and other caregivers regarding the prescribed SNS to maintain continuity of care

Knowledge of:

- 01 Outcome indicators of nutrition therapy (e.g., wound healing, overall length of stay, length of intensive care stay, number of ventilator days, morbidity, mortality, nutritional status)
- 02 Anatomy, physiology, and metabolism related to specialized nutrition support (SNS)
- 03 Disease states and clinical conditions which affect ingestion, digestion, absorption, metabolism, or excretion of nutrients
- 04 Effects of nutritional status that influence the nutrient requirements (e.g., maintenance, repletion, weight loss) of SNS
- 05 Effects of disease states and clinical conditions that influence the selection of the type of SNS
- 06 Indications for and limitations of vascular access devices used to administer parenteral nutrition
- 07 Indications, limitations, and contraindications for the use of parenteral nutrient components (e.g., dextrose, fat emulsion, amino acids, minerals, vitamins)
- 08 Composition and physical and chemical properties of parenteral nutrient components
- 09 Methods to initiate, advance, and discontinue parenteral feeding formulations (e.g., order writing/prescribing)
- 10 Appropriate methods for administering parenteral feeding formulations (e.g., continuous, cyclic)
- 11 Types of administration and filtration devices (e.g., pumps, bags, tubing, filters) used to administer parenteral feeding formulations
- 12 Indications, limitations and contraindications for the use of enteral nutrition or for enteral access devices used to administer enteral nutrition
- 13 Appropriate use of enteral feeding formulations
- 14 Composition and physical properties of enteral feeding formulations (e.g., protein, carbohydrate, fat, water, vitamins, minerals, osmolality)
- 15 Methods for initiation, advancement, and discontinuation of enteral feeding formulations (e.g., order writing/prescribing)
- 16 Appropriate methods for administering enteral feeding formulations (e.g., intermittent, continuous, bolus)
- 17 Types of devices (e.g., pumps, bags, tubing) used to administer enteral feeding formulations
- 18 Sources and use of specialized nutrition support (SNS) education materials for patients, health care professionals, and other caregivers
- 19 Methods to assess the clinical, nutritional, and metabolic responses to SNS
- 20 Methods to prevent and manage complications of SNS
- 21 Therapeutic and compatibility considerations for co-administration of adjuvant drugs with SNS (Specialized Nutrition Support)

Subdomain C. Monitoring and Clinical Management (26% of the examination)**Tasks:**

1. Monitor and evaluate clinical, nutritional, and metabolic responses to specialized nutrition support (SNS)
2. Prevent, identify, and manage complications of SNS
3. Revise the therapeutic plan (plan of care) based on changes in the patient's status

4. Revise drug therapy used in conjunction with SNS
5. Revise SNS based on drug therapy

Knowledge of:

- 01 Fluid, electrolyte, and acid-base balance
- 02 Metabolic, nutritional, and clinical responses to specialized nutrition support (SNS)
- 03 Mechanical complications associated with SNS and methods to prevent and manage them
- 04 Metabolic complications associated with SNS and methods to prevent and manage them
- 05 Infectious complications associated with SNS and methods to prevent and manage them
- 06 Gastrointestinal complications associated with SNS and methods to prevent and manage them
- 07 Psychosocial complications associated with SNS and methods to prevent and manage them
- 08 Pathophysiologic complications (e.g., altered organ function) associated with SNS and methods to prevent and manage them
- 09 Techniques and methods to monitor and manage interactions between drugs and nutrients
- 10 Effect of SNS on pharmacotherapy
- 11 Effect of pharmacotherapy on SNS
- 12 Methods to maintain or restore patency to feeding access devices

Domain 2: Management of Nutrition Support Operations (20% of the examination)

Subdomain A. Patient Care Management (12% of the examination)

Tasks:

1. Develop policies and procedures for patient-care aspects of specialized nutrition support (SNS) (e.g., nutritional assessment, monitoring, patient selection, ordering procedures)
2. Coordinate, manage or participate in activities of interdisciplinary SNS teams or committees (e.g., rounds, human and fiscal resources, educational programs)
3. Design and integrate nutrition support protocols into disease state management (e.g., critical pathways, clinical practice guidelines)
4. Design, implement, and evaluate systems and processes for the safe and effective use of SNS

Knowledge of:

- 01 Methods to determine patient care nutrient requirements
- 02 Methods to maintain patency of parenteral and enteral access devices
- 03 Costs associated with provision of specialized nutrition support (SNS)
- 04 Skills and information necessary for the patient, health-care professionals, and other caregivers to provide SNS
- 05 Methods used to monitor and enhance patient compliance

Subdomain B. Compounding Operations (8% of the examination)

Tasks:

1. Develop policies and procedures for operational aspects of SNS (e.g., labeling of feeding formulations, compounding, storage, beyond-use date, expiration)
2. Participate in development and management of nutrition product formulary
3. Participate in evaluation and selection of infusion-control devices and supplies for SNS
4. Maintain compliance with federal/state regulations and accreditation standards
5. Perform or supervise the compounding and dispensing of parenteral or enteral feeding formulations

Knowledge of:

- 01 Sources of information regarding compatibility, stability, and physical and chemical properties of parenteral and enteral feeding formulations
- 02 Guidelines (e.g., JCAHO, A.S.P.E.N., ASHP, OSHA, USP) for health systems related to specialized nutrition support (SNS)
- 03 United States Pharmacopeia Chapter 797
- 04 Components of a nutrition product formulary
- 05 Aseptic and clean technique for compounding parenteral and enteral feeding formulations and risk level assessment
- 06 Quality control procedures (e.g., infection control, end-product analysis) related to the preparation, dispensing, monitoring, storage, and use of parenteral and enteral feeding formulations
- 07 Indications and limitations of infusion and filtration devices (e.g., pumps, bags, tubing, filters) used to administer parenteral feeding formulations
- 08 Indications and limitations of enteral access devices used to administer enteral nutrition
- 09 Pharmaceutical calculations used in compounding feeding formulations
- 10 Guidelines for parenteral admixture compounding and dispensing
- 11 Compatibility and stability of parenteral feeding formulations (e.g., nutrients, drugs)
- 12 Preparation, compatibility, and stability of enteral feeding formulation (e.g., nutrients, drugs)
- 13 Storage, beyond-use date, expiration and hang time – limitations for SNS feeding formulations

Domain 3: Advancement of Nutrition Support Practice (12% of the examination)

Tasks:

1. Retrieve and evaluate available scientific literature regarding specialized nutrition support (SNS) to advance individual patient care, management of services, and education of patients, health-care providers, and caregivers
2. Design and/or conduct and communicate research (e.g., performance improvement, clinical, and outcomes) in the area of nutrition support

Knowledge of:

- 01 Scientific literature and other resources pertaining to nutrition and the provision of specialized nutrition support (SNS)
- 02 Research design, statistics, and data analysis

- 03 Research methodologies specific to SNS (e.g., bioelectric impedance analysis, total urinary nitrogen) used to design, conduct or evaluate scientific investigations
- 04 Pertinent professional organizations, publications, and other resources that transmit nutrition support knowledge
- 05 Procedures for obtaining professional privileges (e.g., writing orders, drug administration)
- 06 SNS use evaluations and other continuous quality improvement techniques related to the provision of SNS (e.g., system outcome indicators such as error rates associated with administration and compounding)
- 07 Communication technologies for the monitoring and clinical management of SNS
- 08 Patient outcome indicators of nutrition therapy (e.g., wound healing, length of stay, morbidity, mortality, nutritional status)